

## Revolutionary change in paddy production through Effective TOT in tribal belt

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### ABSTRACT

*Krishi Vigyan Kendra Vyara is located in the Tapi district – the southeastern part and the tribal belt of Gujarat. The district shares its borders with Surat, Navsari and Dang district in North-west, South and East respectively with Maharashtra state in East. The conspicuous features of the district are undulating topography with steep slopes and heavy rainfall. The av. Rainfall of the district is about 80 –100 inches per annum. The distribution is erratic and thus, causing damage to the crops like Pulses, Paddy and other cereals. The district is composed largely of tribal communities. This, communities depend primarily on agriculture for their livelihood supplemented by income from seasonal employment in nearest industrial town. Soils of the district in general can be classified as medium black to heavy black, Red murrum and rocky with low innate fertility. Agriculturally, about 60 per cent of the cultivated area is undersigned crop during monsoon. The main crops of the district are – Paddy, Sorghum, Groundnut, Pulses, Sugarcane, Gram and vegetables-Brinjal, Okra. Paddy is the staple foods of the tribal communities of the district. Among Vegetable crops Okra is main crop for export quality. Looking to the importance of the paddy crop in the district has started the seed multiplication programme since 2001. KVK has started to multiply the high yielding varieties of the paddy at centre as well as on farmer's field. It was planned to cover at least 20-25 per cent of the area under HYVs of paddy in surrounding 45-50 villages. As a result of successful overture of HYVs of the paddy, the entire district has twisted an interest to espous HYVs in paddy as a replacement for conventional varieties. This efforts has cemented the way to introduce seed village concept in the paddy itself. Five adopted villages of this centre had been decorated as fully self- sufficient paddy seed villages and also supplied the paddy seed to the adjacent villages. The apparent impact of this programme can be seen in the form of raising the standard of living of the tribal people. Tribal people are able to discriminate the high yielding varieties of the paddy compared with conservative age old varieties in the form of economics. This study is a boon for tribal upliftment in the other region of tribal in the country. This study can be eye opener for the extension workers in the field of TOT at grass roots level. The seed production programme had also increased the revolving funds of the KVK up to remarkable level. This seed production programmes have also created the affection of the tribal farmers towards KVK and the centre became popular among tribal farming community.*

**Key Words:** - Productivity, TOT Efforts, High Yielding Varieties and KVK.

### District profile

Krishi Vigyan Kendra Vyara is located in the Tapi district—the southeastern part and the tribal belt of Gujarat. The district shares its borders with Surat, Navsari and Dang district in North-west, South and East respectively with Maharashtra state in East. The geographical area of the district is 7.79 lac ha. The conspicuous features of the district are undulating topography with steep slopes and heavy rainfall. The av.

Rainfall of the district is about 80 –100 inches per annum. The distribution is erratic and thus, causing damage to the crops like Pulses, Paddy and other cereals. The district is composed largely of tribal communities. This, communities depend primarily on agriculture for their livelihood supplemented by income from seasonal employment in nearest industrial town. Soils of the district in general can be classified as medium black to heavy black, Red murrum and rocky with low innate fertility. Agriculturally, about 60 per cent of the cultivated

area is undersigned crop during monsoon. The main crops of the district are – Paddy, Sorghum, Groundnut, Pulses, Sugarcane, Gram and vegetables-Brinjal, Okra. Paddy is the staple foods of the tribal communities of the district. Among Vegetable crops Okra is main crop for export quality.

### **Krishi Vigyan Kendra**

KVK Vyara is working under the auspices of Navsari Agricultural University. It has started its activities since September,2000. Kendra has undertaken **Seed multiplication programme of Paddy since 2000-01.**

### **Genesis of Programme**

To ascertain the constraints encountered by Paddy growers of this area, a Benchmark survey was carried out by multidisciplinary team of scientist of KVK during the year 2000-01. The results of the survey revealed following :

- Large majority of the tribal farmers are cultivating conventional varieties (Tichun native –1, Sathi and Kada) of paddy.
- Conventional varieties are early mature, having coarse grain with dull husk colour, and highly susceptible to water logging as the rain coincide with maturity of paddy in later stage.
- Paddy growers are using higher seed rate i.e. 30 – 40 Kg for transplanting 1 acre of land as they produce seed of their own.
- They were planting 10-12 seedlings / hill resulting in to over plant population and lower yield. It also increases the cost of cultivation because harvesting takes much time.
- Farmers were using impure seed, as they produce it on their farm without taking much care.
- Av. Yield of Paddy (conventional varieties) is about 2500 Kgs./ha.under good management practices.
- Market value of the conventional varieties is less ranges between Rs. 5 –6 /Kg. because of coarse grain and unpleasant colour of husk.
- Tribal farmers are not satisfied with yield status of conventional varieties of Paddy.
- # The farmers having assured irrigation facilities or low land kyari expressed their desired to have high yielding

variety with **late maturity** to avoid damage by rains to crop at the maturity time.

- # On the contrary, farmers growing paddy under rainfed condition expressed their desire to have high yielding **early mature** variety.
- # It was also noticed that most of the tribal farmers possess small piece of land. Whatever they produced from the land during monsoon, they have to depend on it for their livelihood. They are striving hard for their food especially during August and September.

### **Intervention of KVK**

Considering the above facts KVK has initiated the **programme of multiplication of seeds of high yielding varieties of Paddy** under both rain fed and irrigated condition since 2000-01 on instructional farm. The objective was to popularize high yielding varieties by supplying pure seeds to the farmers on regular basis and thereby increase the area and productivity of Paddy. It has been planned to cover at least 20-25 per cent of the area under the Paddy in the surrounding 45 villages with increasing the productivity and profitability per unit area.

### **Approach**

As many as 92 training programmes especially on production technologies of HYVs of Paddy are organized covering 2636 farmers. Front Line Demonstrations of HYVs of Paddy are also conducted on farmer's field to show them the production potentialities. Field trials of the HYVs were conducted on instructional farm of Kendra to screen the best varieties from among the seeds of different varieties supplied by Navsari Agricultural University. In all, 41 Field days and 18 farmers days are also organized on KVK farm as well as on demo plots on farmer's field, benefiting 17593 paddy growers. This has created awareness amongst tribal farmers about use of HYVs of paddy .

Efforts are made to produce and supply the improved seeds of the paddy to the paddy growers of this area.

### **Achievement of the programme**

- Successfully introduced HYVs of paddy such as IR-28,GR-3, GR-4, GR-5, GR-7, GR-11, Gurjari and Jaya in this area.
- About 545 ha of land have been covered under HYVs of Paddy replacing conventional varieties. More than 1200

farmers of 45 villages are directly benefited by this programme.

- Av. Yield of Paddy per unit area is almost doubled.
- Reduction in cost of cultivation as a means of reduction in seed rate and maintenance of optimum plant population. Earlier farmers were using 30-40 Kg seed rate for transplanting of one acre of land. Now with adoption of HYVs they are using 10-12 Kg of seeds for the transplanting of same area.
- Farmers getting higher yields and more profit from the unit area as improved varieties fetch little higher prices as compared to local varieties because of slender grains.
- More than 55 farmers have started multiplication of seeds in their own farm under the supervision and guidance of KVK scientist. This will increase the area under HYVs at a faster rate in coming years. This in turn will help in changing socio-economic status of the tribal farmers of this area.

#### Economics

##### Conventional varieties

- Av. Yield 3000 Kg/ha.

- Av. Market price Rs. 5-7 /Kg.
- Total cost of cultivation Rs.9170 / ha.
- Av. Income Rs. 21000 / ha.
- **Net profit Rs. 11838 / ha**

##### High yielding varieties

- Av. Yield 4500 Kg/ha.
- Av. Market price Rs. 6-8 /Kg.
- Total cost of cultivation Rs.8120/ha.
- Av. Income Rs.36000/ ha.
- **Net profit Rs. 27880 / ha.**

Thus, by adopting HYVs and recommended improved technologies (Table 2) such as seedrate, fertilizer doses, crop geometry, timely hand weeding and plant protection measures for the control of stem borer, tribal farmers of the targeted area are getting higher production and income from paddy cultivation.

**Table 1 : Front Line Demonstration on HYVs of Paddy organized by KVK**

Year	Season	Area	No.of Farmers	Variety	Village	Average Yield (Q/ha)		Increase in yield (%)
						Demo	Local	
2001	Kharif	04	10	Jaya GR-5	04	59.15 24.99	52.00 18.00	13.75 38.80
2002	Kharif	3.80	09	Gurjari GR-7 GR-5 GR-8	06	55.75 62.50 20.40 15.27	52.00 55.00 17.00 17.00	7.21 13.64 20.00 9.82
2002	Summer	12.5	24	Gurjari GR-3 GR-7	04	69.29 64.97 79.66	62.00 -- 65.29	11.75 -- 22.00
2003	Kharif	14	31	Gurjari GR-7 GR-5 GR-8	07	65.08 68.24 26.96 17.48	53.92 61.50 19.50 14.00	21 11 38 25
2003	Summer	02	04	Gurjari	04	68.38	60.00	14
2004	-	-	-	-	-	-	-	-
2004	Summer	-	-	-	-	-	-	-

2005	Kharif	10	26	Gurjari	08	52.90	41.41	28
				GR-7		54.66	41.84	31
				GR-8		15.60	11.92	31
				GR-12		45.58	40.74	12
2005	Summer	08	16	Gurjari	03	61.38	49.04	25
2006	Kharif	-	-	-	-	-	-	-
2007	Kharif	10	42	GR-5	08	22.23	13.75	60
				GR-7		52.05	40.65	28
				GR-8		16.74	13.28	26
				GR-9		20.66	16.00	29
				GR-12		51.09	40.93	25
2008	Kharif	17	42	GR-5	06	18.63	11.13	62
				GR-8		14.19	9.14	27
				GR-9		10.53	9.14	15
				Jaya		52.59	43.77	20
2009	Kharif	15	54	GR-9	08	11.13	9.30	19.67
				GR-7		51.50	41.50	24.09
				Jaya		58.75	47.25	24.34
2010	Kharif	22	81	Jaya	08	59.50	47.75	24.61
				GR-5		15.50	12.25	28.75
				NAUR-1		60.50	47.75	26.70
				GAR-13		55.75	46.50	18.89

**Table 2 : Adoption of Paddy production technologies by tribal farmers.**

n= 120

Sr.No	Reco. practices	Before		After	
		No.	%	No.	%
1	High yielding varieties	41	35.65	91	71.00
2	Reco. Seed rate	35	24.53	94	73.45
3	No. of seedlings /hill	32	20.45	82	67.43
4	Cutting of tips of young seedlings	28	21.23	73	60.53
5	Spraying of insecticide for stem borer	25	17.28	64	54.38
6	Soil application of Carbofuran for stem borer	32	23.55	78	67.78
7	Reco. Dose of fertilisers	25	20.83	66	55.00
8	Hand weeding	38	32.43	89	74.55

### CONCLUSION

As a result of successful introduction of HYVs of the paddy, the entire district has twisted an interest to espous HYVs in paddy as a replacement for conventional varieties. This efforts has cemented the way to introduce seed village concept in the paddy itself. Five adopted villages of this centre had been decorated as fully self- sufficient paddy seed villages and also supplied the paddy seed to the adjacent villages. The apparent impact of this programme can be seen in the form of raising the standard of living of the tribal people. Tribal

people are able to discriminate the high yielding varieties of the paddy compared with conventional age old varieties in the form of economics. This study is a boon for tribal upliftment in the other region of tribal in the country. This study can be eye opener for the extension workers in the field of TOT at grass roots level. The seed production programme had also increased the revolving funds of the KVK up to remarkable level. This seed production programmes have also created the affection of the tribal farmers towards KVK and the centre become popular among triba farming community.